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EXAMINER	
SEFCHECK, GREGORY B	

ART UNIT	PAPER NUMBER
2616	

DATE MAILED: 12/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/753,227	ENGWER ET AL.	
	Examiner	Art Unit	
	Gregory B. Sefcheck	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 September 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2-11 and 13-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *2-11 and 13-34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

- Applicant's Request for Continued Examination filed 9/14/2006 is acknowledged.
- Claims 5, 7, 10, 11, and 20 have been amended.
- Claims 12 and 35 have been cancelled. Claim 1 was previously cancelled.
- The previous rejections of claims 12 and 35 under 35 USC 112, 2nd paragraph are withdrawn as moot in view of the cancelled claims.
- Claims 2-11 and 13-34 remain pending.

Claim Objections

1. Claim 7 is objected to because of the following informalities:

Claim 7 recites the limitation "said power-save mode" on line 5 of the claim. There is insufficient antecedent basis for this limitation in the claim. Antecedent basis for "power-save mode" is established in independent claim 5. However, claim 7 depends from independent claim 2, which does not establish antecedent basis for "power-save mode".

Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 10, 13-16, 18-20, 22, 24 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,067,297 to Beach in view of U.S. Patent Application Publication No. US 2002/0045428 Al by Chesson.

Regarding claim 10, Beach teaches providing an access point (e.g., access point AP, mobile unit MU, extended access point EAP, see col. 4, line 63 – col. 5, line 27); and broadcasting a modified beacon (e.g., DTIM) from the access point (e.g., embedded access point EAP, see col. 11, lines 55-64) to a plurality of wireless units, the modified beacon comprises (i) a plurality of information elements comprising an access point name (e.g., AP_ID, see col. 11, line 3), an access point identifier information (e.g., identifying address, see col. 1, lines 47-48) and a load balancing information (e.g., see col. 1, lines 48-60 regarding hopping pattern, timing information, and associated mobile units; and col. 1, lines 61-64 regarding the information is included in the beacon).

Beach discloses communications within a LAN where CRC (first FCS) is utilized in MAC frames (Col. 12-13, line 54-4). Beach does not explicitly disclose a second FCS.

However, it is generally considered to be within the ordinary skill in the art to duplicate parts for a multiplied effect. St. Regis Paper Co. v. Bemis Co., Inc., 193 USPQ 8, 11 (7th Cir. 1977).

Thus, at the time of the invention it would have been obvious to one of ordinary skill in the art to include a second frame check sequence (FCS) in the beacon of

Beach, since it is generally considered to be within the ordinary skill in the art to duplicate parts for a multiplied. Thus, at the time of the invention it would have been obvious to one of ordinary skill in the art to include one or more FCS in the frame-based communications of Beach since implementing FCS for reliable communication is well known in the art for frame-based communications.

Beach does not specifically disclose load balancing characteristics pertaining to characteristics of a plurality of wireless units.

Chesson, like Beach, also teaches a method comprising a modified beach (e.g., see paragraphs 0043-0086) and further, teaches the beacon comprises load balancing information pertaining to characteristics of a plurality of wireless units in communication with an access point and transmitting the beacon by the access point (e.g., see paragraph 0050 regarding overlaid start beacon 520 comprising information pertaining to the time slot assigned for each node). Also, the modified beacon teachings of Chesson are directed towards frame-based communications (e.g., see Chesson, paragraph 0043). Additionally, the teachings of Chesson provide a modified beacon method with reduced overhead and increased number of operational modes for improved efficiency and system compatibility (e.g., see paragraphs 0034-0040).

Thus, at the time of the invention it would have been obvious to one of ordinary skill in the art to apply the modified beacon teachings of Chesson to the modified beacon method of Beach in order to provide improved efficiency and system compatibility.

Regarding claims 13, Beach teaches the wireless unit decides whether or not to associate with a given access unit based on "any information the access unit may have issued indicating how many mobile units are associated with it" (col. 1, lines 52-56). Thus, Beach teaches an indicator which indicates whether a count of a number of wireless units exchanging data at a rate exceeds a predetermined threshold (i.e., "any information" includes that which indicates the threshold number of mobile units that can be associated with the access unit).

Regarding claim 14, Beach teaches a beacon comprises a DTIM beacon and a TIM beacon (e.g., see col. 11, lines 13-63).

Regarding claim 15, Beach teaches a method comprising: modifying a beacon to produce a modified beacon (e.g., beacon comprising TIM and DTIM fields, see col. 11, line 1 — col. 12, line 51), the modified beacon (e.g., beacon) comprises a plurality of additional information elements comprising an access point name (e.g., A P s e e col. 11, line 3), an access point identifier information (e.g., identifying address, see col. 1, lines 47-48) and a load balancing information (e.g., see col. 1, lines 48-60 regarding hopping pattern, timing information, and associated mobile units; and col. 1, lines 61-64 regarding the information is included in the beacon); and transmitting the modified beacon (e.g., see col. 11, lines 59-60).

However, Beach may not specifically disclose load balancing information pertains to characteristics of at least one wireless unit in communication with an access point and transmitting the beacon by the access point.

Chesson, like Beach, also teaches a method comprising a modified beach (e.g., see paragraphs 0043-0086) and further, teaches the beacon comprises load balancing information pertaining to characteristics of at least one wireless unit in communication with an access point and transmitting the beacon by the access point (e.g., see paragraph 0050 regarding overlaid start beacon 520 comprising information pertaining to the time slot assigned for each node). Additionally, the teachings of Chesson provide a modified beacon method with reduced overhead and increased number of operational modes for improved efficiency and system compatibility (e.g., see paragraphs 0034-0040).

Thus, at the time of the invention it would have been obvious to one of ordinary skill in the art to apply the modified beacon teachings of Chesson to the modified beacon method of Beach in order to provide improved efficiency and system compatibility.

Regarding claim 16, Beach discloses communications within a LAN where CRC (first FCS) is utilized in MAC frames (Col. 12-13, line 54-4). Beach does not explicitly disclose a second FCS.

Regarding claim 18, Beach teaches the modified beacon (e.g., beacon) is a DTIM beacon (e.g., see col. 11, lines 19-22, beacon comprising a set DTIM field).

Regarding claim 19, Beach teaches the modified beacon (e.g., beacon) is a TIM beacon (e.g., see col. 11, lines 19-22, beacon comprising a set TIM field).

Regarding claim 20, Beach teaches an access point (e.g., access point AP, mobile unit MU, extended access point EAP, see col. 4, line 63 -- col. 5, line 27) in accordance with IEEE 802.11 comprising: logic to broadcast a special delivery traffic indication message DTIM beacon (e.g., see col. 11, lines 13-22) comprising a traffic indicator (e.g., DTIM field within beacon frames are set, see col. 11, lines 19-21) to denote transmission of a data frame (i.e., access point has data queued for future transmission, see col. 11, lines 21-22); and logic to broadcast the data frame immediately after broadcasting the special DTIM beacon (e.g., see col. 11, line 55 – col. 12, line 7), the data frame comprises at least one of a load balancing information (e.g., see col. 1, lines 48-60 regarding hopping pattern, timing information, and associated mobile units; and col. 1, lines 61-64 regarding the information is included in the beacon).

Beach does not specifically disclose a data frame is a first frame transmitted after the beacon in order to reduce the time required by a wireless unit in a power-save mode to remain powered on to receive the data frame.

Beach does, however, disclose that access points support both continuously awake mode (CAM) and power save mode (PSP) for the mobile units. Beach discloses that PSP mobiles only awaken for beacons that indicate there is broadcast data to be sent. Beach shows that the PSP unit sends a poll frame to the AP after the beacon indicates the AP has data queued for it, and the AP then proceeds with transmitting the queued data to the mobile (Col. 11-12, lines 9-7).

As discussed above, Chesson also teaches a modified beacon method, and further, explicitly teaches a data frame (e.g., in the data slot at 528 in FIG. 1) is a first frame transmitted after the beacon (e.g., after overlaid start beacon 520, see FIG. 1 and paragraphs 0048-0069). Additionally, as discussed above, the teachings of Chesson provide a modified beacon method with reduced overhead and increased number of operational modes for improved efficiency and system compatibility (e.g., see paragraphs 0034-0040).

Thus, at the time of the invention it would have been obvious to one of ordinary skill in the art to apply the modified beacon teachings of Chesson to the modified beacon method of Beach in order to provide improved efficiency and system compatibility and reduce the amount of time required by a wireless unit in a power-save mode to remain powered on to receive the data frame.

Regarding claim 22, Beach teaches the load balancing information comprises data pertaining to characteristics of wireless units in communication with the access

point (e.g., see col. 1, lines 52-56 regarding indication of how many mobile units are already associated with the access point).

Regarding claim 24, Chesson also teaches broadcasting a data frame (e.g., via second data slot 528, see FIG. 1) after a definitive time period (e.g., the time period for the first time slot 528) has elapsed after a special beacon has been broadcasted (e.g., via start beacon 520). As discussed above, the teachings of Chesson provide a modified beacon method with reduced overhead and increased number of operational modes for improved efficiency and system compatibility (e.g., see paragraphs 0034-0040).

Thus, at the time of the invention it would have been obvious to one of ordinary skill in the art to apply the modified beacon teachings of Chesson to the modified beacon method of Beach in order to provide improved efficiency and system compatibility.

Regarding claim 29, Beach teaches the system is configured in accordance with the IEEE 802.11 standard protocol (e.g., see col. 3, lines 9-11).

4. Claims 2, 3, 5-8, 25-28, 30-32 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beach in view of Chesson, further in view of the article entitled, "A New Efficient access Protocol for Integrating Multimedia Services in the Home Environment" (IEEE, June 1999) by Koutroubinas et al.

Regarding claim 2, Beach in view of Chesson teaches a method and access point logic as discussed above regarding claim 1, and further, Beach teaches the method and access point logic is in accordance with IEEE 802.11 (e.g., see col. 3, lines 8-11) comprising: broadcasting a special delivery traffic indication message DTIM beacon by an access point (e.g., see col. 11, lines 13-22), the DTIM beacon having at least a traffic indicator bit that is set (e.g., DTIM field within beacon frames are set, see col. 11, lines 19-21) to denote data is to be transmitted after the DTIM beacon (i.e., access point has data queued for future transmission, see col. 11, lines 21-22), and broadcasting by the access point the data frame after broadcasting the special DTIM beacon (e.g., see col. 11, line 55 – col. 12, line 7), the data frame comprises at least load balancing information (e.g., see col. 1, lines 48-60 regarding hopping pattern, timing information, and associated mobile units; and col. 1, lines 61-64 regarding the information is included in the beacon).

Beach does not specifically disclose a data frame is a first frame transmitted after the beacon in order to reduce the time required by a wireless unit in a power-save mode to remain powered on to receive the data frame.

Beach does, however, disclose that access points support both continuously awake mode (CAM) and power save mode (PSP) for the mobile units. Beach discloses that PSP mobiles only awaken for beacons that indicate there is broadcast data to be sent. Beach shows that the PSP unit sends a poll frame to the AP after the beacon indicates the AP has data queued for it, and the AP then proceeds with

transmitting the queued data to the mobile (Col. 11-12, lines 9-7).

Chesson also teaches a modified beacon method, and further, teaches a data frame (e.g., in the data slot at 528 in FIG. 1) is a first frame transmitted after the beacon (e.g., after overlaid start beacon 520, see FIG. 1 and paragraphs 0048-0069). Additionally, as discussed above, the teachings of Chesson provide a modified beacon method with reduced overhead and increased number of operational modes for improved efficiency and system compatibility (e.g., see paragraphs 0034-0040).

Thus, at the time of the invention it would have been obvious to one of ordinary skill in the art to apply the modified beacon teachings of Chesson to the modified beacon method of Beach in order to provide improved efficiency and system compatibility and reduce the amount of time required by a wireless unit in a power-save mode to remain powered on to receive the data frame.

Beach in view of Chesson may not specifically disclose a particular bit in a field denotes a specific transmission of a data frame after the beacon.

Koutroubinas also teaches a beacon in accordance with IEEE 802.11 and further, specifically teaches a beacon (e.g., Beacon B, see page 483, column 2, third-fifth paragraphs) comprises a field having a traffic indicator bit (e.g., Network Allocation Vector NAV value) that is set to denote a transmission of a data frame after the special beacon. The teachings of Koutroubinas provide dynamic bandwidth

allocation for improved system efficiency (e.g., see page 486, section "IV. Conclusion").

Thus, at the time of the invention it would have been obvious to one of ordinary skill in the art to include the information of the IEEE 802.11 configured Beacon (B) of Koutroubinas within the IEEE 802.11 DTIM beacon of Beach in view of Chesson in order to provide dynamic bandwidth allocation for improved system efficiency.

Regarding claim 3, Beach teaches the system is configured in accordance with the IEEE 802.11 standard protocol (e.g., see col. 3, lines 9-11).

Regarding claim 5, Beach teaches a method and access point logic in accordance with IEEE 802.11 comprising: broadcasting a special delivery traffic indication message DTIM beacon (e.g., see col. 11, lines 13-22) by an access point (e.g., embedded access point EAP, see col. 11, lines 55-64), the DTIM beacon having at least a traffic indicator bit that is set (e.g., DTIM field within beacon frames are set, see col. 11, lines 19-21) to denote data is to be transmitted after the DTIM beacon (i.e., access point has data queued for future transmission, see col. 11, lines 21-22), and broadcasting the data frame that includes at least load balancing information (e.g., see col. 1, lines 48-60 regarding hopping pattern, timing information, and associated mobile units; and col: 1, lines 61-64 regarding the information is included in the beacon) by the access point (e.g., embedded access point EAP, see col. 11, lines 55-64), the data frame being broadcast after a definitive

time period has elapsed after broadcasting of the special DTIM beacon (e.g., see col. 11, line 55 — col. 12, line 7).

Beach does not specifically disclose a data frame is a first frame transmitted after the beacon in order to reduce the time required by a wireless unit in a power-save mode to remain powered on to receive the data frame.

Beach does, however, disclose that access points support both continuously awake mode (CAM) and power save mode (PSP) for the mobile units. Beach discloses that PSP mobiles only awaken for beacons that indicate there is broadcast data to be sent. Beach shows that the PSP unit sends a poll frame to the AP after the beacon indicates the AP has data queued for it, and the AP then proceeds with transmitting the queued data to the mobile (Col. 11-12, lines 9-7).

Chesson also teaches a modified beacon method, and further, teaches a data frame (e.g., in the data slot at 528 in FIG. 1) is a first frame transmitted by an access point after the beacon (e.g., after overlaid start beacon 520, see FIG. 1 and paragraphs 0048-0069). Additionally, as discussed above, the teachings of Chesson provide a modified beacon method with reduced overhead and increased number of operational modes for improved efficiency and system compatibility (e.g., see paragraphs 0034-0040).

Thus, at the time of the invention it would have been obvious to one of ordinary skill in the art to apply the modified beacon teachings of Chesson to the modified beacon method of Beach in order to provide improved efficiency and system

compatibility and reduce the amount of time required by a wireless unit in a power-save mode to remain powered on to receive the data frame.

Beach in view of Chesson may not specifically disclose a particular bit in a field denotes a specific transmission of a data frame after the beacon.

Koutroubinas also teaches a beacon in accordance with IEEE 802.11 and further, specifically teaches a beacon (e.g., Beacon B, see page 483, column 2, third-fifth paragraphs) comprises a field having a traffic indicator bit (e.g., Network Allocation Vector NAV value) that is set to denote a transmission of a data frame after the special beacon. Further, Koutroubinas teaches that each Beacon packet defines the timing of the transmission of data traffic, and therefore, the teachings of Koutroubinas encompass data frames being broadcast after a definitive time period has elapsed after the broadcasting of the special beacon (e.g. see page 483, column 2, fourth paragraph, lines 5-8). The teachings of Koutroubinas provide dynamic bandwidth allocation for improved system efficiency (e.g., see page 486, section "IV. Conclusion").

Thus, at the time of the invention it would have been obvious to one of ordinary skill in the art to include the information of the IEEE 802.11 configured Beacon (B) of Koutroubinas within the IEEE 802.11 DTIM beacon of Beach in order to provide dynamic bandwidth allocation for improved system efficiency.

Regarding claim 6, Beach in view of Chesson in view of Koutroubinas teach the method discussed above regarding claim 5, and further, Chesson teaches load balancing information includes an indication of a number of wireless units in communication with the access point (e.g., see paragraph 0050 regarding time slot assignment for respective nodes which implicitly includes a count of which nodes are in communication with the access point). Additionally, as discussed above, the teachings of Chesson provide a modified beacon method with reduced overhead and increased number of operational modes for improved efficiency and system compatibility (e.g., see paragraphs 0034-0040).

Thus, at the time of the invention it would have been obvious to one of ordinary skill in the art to apply the modified beacon teachings of Chesson to the modified beacon method of Beach in view of Chesson in order to provide improved efficiency and system compatibility.

Regarding claim 7, Beach teaches the broadcasting of both the special DTIM beacon and the data frame is performed by an access point to the device being a wireless unit of a plurality of wireless units (e.g., see FIG. 2 and cols. 5-6).

Beach does not specifically disclose a data frame is a first frame transmitted after the beacon in order to reduce the time required by a wireless unit in a power-save mode to remain powered on to receive the data frame.

Beach does, however, disclose that access points support both continuously awake mode (CAM) and power save mode (PSP) for the mobile units. Beach

discloses that PSP mobiles only awaken for beacons that indicate there is broadcast data to be sent. Beach shows that the PSP unit sends a poll frame to the AP after the beacon indicates the AP has data queued for it, and the AP then proceeds with transmitting the queued data to the mobile (Col. 11-12, lines 9-7).

Chesson also teaches a modified beacon method, and further, teaches a data frame (e.g., in the data slot at 528 in FIG. 1) is a first frame transmitted by an access point after the beacon (e.g., after overlaid start beacon 520, see FIG. 1 and paragraphs 0048-0069). Additionally, as discussed above, the teachings of Chesson provide a modified beacon method with reduced overhead and increased number of operational modes for improved efficiency and system compatibility (e.g., see paragraphs 0034-0040).

Thus, at the time of the invention it would have been obvious to one of ordinary skill in the art to apply the modified beacon teachings of Chesson to the modified beacon method of Beach in order to provide improved efficiency and system compatibility and reduce the amount of time required by a wireless unit in a power-save mode to remain powered on to receive the data frame.

Regarding claim 8, Beach teaches the load balancing information is computed from information pertaining to characteristics of wireless units in communication with the access point (e.g., see col. 1, lines 52-56 regarding indication of how many mobile units are already associated with the access point).

Regarding claims 25 and 32, Beach teaches the load balancing information comprises a count of a number of wireless units currently associated with the access point, or total utilization level of the access point (e.g., see col. 1, lines 52-56 regarding indication of how many mobile units are already associated with the access point).

Regarding claims 26 and 28, Beach teaches the wireless unit decides whether or not to associate with a given access unit based on "any information the access unit may have issued indicating how many mobile units are associated with it" (col. 1, lines 52-56). Thus, Beach teaches the load balancing information comprises an indicator as to whether the access point is able to access one or more additional wireless units, since "any information" indicating the number of mobile units that are/can be associated with the access unit encompasses "an indicator" as recited in claim 26. Further, regarding claim 28, Beach similarly teaches an indicator which indicates whether a count of a number of wireless units exchanging data at a rate exceeds a predetermined threshold (i.e., "any information" includes that which indicates the threshold number of mobile units that can be associated with the access unit).

Regarding claims 27 and 34, Koutroubinas teaches a value (e.g., Beacon period) corresponding to a speed (e.g., frame rate) of an uplink from the access point to a backbone network at which the access point is coupled (e.g., see page 485, column 2, lines 4-5). As discussed above, the teachings of Koutroubinas provide

dynamic bandwidth allocation for improved system efficiency (e.g., see page 486, section "IV. Conclusion").

Thus, at the time of the invention it would have been obvious to one of ordinary skill in the art to include the information of the IEEE 802.11 configured Beacon (B) of Koutroubinas within the IEEE 802.11 DTIM beacon of Beach in view of Chesson in order to provide dynamic bandwidth allocation for improved system efficiency.

Regarding claim 30, Beach teaches the system is configured in accordance with the IEEE 802.11 standard protocol (e.g., see col. 3, lines 9-11).

Regarding claim 31, Beach teaches the device is a wireless unit (see FIG. 2).

5. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Beach in view of Chesson, further in view of U.S. Patent No. 5,548,821 to Coveley.

Regarding claim 17, Beach in view of Chesson teaches the method as described above regarding claim 16, however, may not specifically disclose the beacon comprises a test pattern and a second frame check sequence.

Coveley teaches an adaptive system for self-tuning in a wireless communications environment whereby a test pattern (e.g., test sequence) is transmitted and a receiver determines which operating frequency to select based upon the accuracy of the received test pattern with a known test pattern (e.g., see col. 1,

line 62 – col. 2, line 55). The teachings of Coveley provide improved accuracy of transmission and overcomes prior art disadvantages such as receiving center operating frequency drift, and further, the teachings of Coveley permit transmitters to have slightly different carrier frequencies which more suitably accommodates systems with less precise transmission frequencies (e.g., see col. 2, lines 1-8).

Thus, at the time of the invention it would have been obvious to one of ordinary skill in the art to apply the teachings of Coveley to the method of Beach in view of Chesson in order to provide improved accuracy of transmission and to accommodate a greater range of transmission frequency variance.

Beach discloses communications within a LAN where CRC (first FCS) is utilized in MAC frames (Col. 12-13, line 54-4). Beach does not explicitly disclose a second FCS.

However, it is generally considered to be within the ordinary skill in the art to duplicate parts for a multiplied effect. St. Regis Paper Co. v. Bemis Co., Inc., 193 USPQ 8, 11 (7`h Cir. 1977).

Thus, at the time of the invention it would have been obvious to one of ordinary skill in the art to include a second frame check sequence (FCS) in the beacon of Beach, since it is generally considered to be within the ordinary skill in the art to duplicate parts for a multiplied. Thus, at the time of the invention it would have been obvious to one of ordinary skill in the art to include one or more FCS in the frame-based communications of Beach since implementing FCS for reliable communication is well known in the art for frame-based communications.

6. Claims 4, 9, 11, 21 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beach in view Chesson in view of Koutroubinas, further in view of U.S. Patent No. 5,548,821 to Coveley.

Regarding claims 4, 9, 11, 21 and 23, Beach in view of Chesson in view of Koutroubinas teach the method as described above regarding claims 3 and 20, however, may not specifically disclose transmitting a static bit test pattern.

Coveley teaches an adaptive system for self-tuning in a wireless communications environment whereby a static bit test pattern (e.g., test sequence) is transmitted and a receiver determines which operating frequency to select based upon the accuracy of the received test pattern with a known test pattern (e.g., see col. 1, line 62 – col. 2, line 55). The teachings of Coveley provide improved accuracy of transmission and overcomes prior art disadvantages such as receiving center operating frequency drift, and further, the teachings of Coveley permit transmitters to have slightly different carrier frequencies which more suitably accommodates systems with less precise transmission frequencies (e.g., see col. 2, lines 1-8).

Thus, at the time of the invention it would have been obvious to one of ordinary skill in the art to apply the teachings of Coveley to the method of Beach in view of Chesson in view of Koutroubinas in order to provide improved accuracy of transmission and to accommodate a greater range of transmission frequency variance.

Regarding claims 11 and 17, Beach discloses communications within a LAN where CRC (first FCS) is utilized in MAC frames (Col. 12-13, line 54-4). Beach does not explicitly disclose a second FCS.

However, it is generally considered to be within the ordinary skill in the art to duplicate parts for a multiplied effect. St. Regis Paper Co. v. Bemis Co., Inc., 193 USPQ 8, 11 (7th Cir. 1977).

Thus, at the time of the invention it would have been obvious to one of ordinary skill in the art to include a second frame check sequence (FCS) in the beacon of Beach, since it is generally considered to be within the ordinary skill in the art to duplicate parts for a multiplied. Thus, at the time of the invention it would have been obvious to one of ordinary skill in the art to include one or more FCS in the frame-based communications of Beach since implementing FCS for reliable communication is well known in the art for frame-based communications.

7. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Beach in view of Chesson, further in view of U.S. Patent No. 6,456,597 to Bare.

Regarding claim 33, Beach in view of Chesson teach the method discussed above regarding claim 10, however, may not specifically disclose load balancing information includes a number of wireless hops to a wired backbone network with which the access point is in communication.

Bare, like Beach, also teaches wireless communications using MAC in a LAN (e.g., see abstract), and specifically, Bare teaches load balancing information (e.g., see "load balance" in abstract and at col. 56, lines 38-52) includes a number of wireless hops (e.g., see col. 29, line 1-- col. 30, line 53 regarding "hop count" in a given "load balance domain") to a wired backbone network with which the access point is in communication (e.g., see col. 30, lines 43-53 regarding the "hop count field" being set to zero by the edge switch, inherently coupling the access point to the wired backbone through one or more additional switch elements, and is incremented by each switch the packet encounters). Additionally, the teachings of Bare also provides "improved utilization of the aggregate bandwidth of all paths in [a] network", "rapid discovery of a device corresponding to an unknown destination MAC address", and "reduce[d].... number of overhead packet transmissions (see col. 6, lines 12-24).

Thus, at the time of the invention it would have been obvious to one of ordinary skill in the art to apply the teachings of Bare to the method of Beach in view of Chesson in order to provide improved utilization of the aggregate bandwidth of all paths in a network, rapid discovery of a device corresponding to an unknown destination MAC address, and reduced number of overhead packet transmissions (see Bare at col. 6, lines 12-24).

Response to Arguments

8. Applicant's arguments filed 9/14/2006 have been fully considered but they are not persuasive.

- In the Remarks on pg. 8-9 of the Amendment, Applicant contends that Chesson's disclosure of a beacon with load assignment information does not constitute "load balancing information".
- The Examiner respectfully disagrees. It is the opinion of the Examiner that Chesson's disclosure of a beacon carrying load assignment information, informing the nodes which timeslots are to be used for communication in order to optimize communications between the AP and the nodes, meets a reasonable interpretation of the claimed "load balancing information", as the load assignment information describes how the communication between the AP and the nodes is distributed (or balanced) within the frame.

- In the Remarks on pg. 9 of the Amendment, Applicant contends that Beach and Chesson doe not specifically disclose FCS and that the Examiner's Official Notice that FCS is well known in the art is not sufficient to reject the claims.
- As now shown in the claim rejections above, Official Notice is no longer relied upon to meet the claim limitations involving FCS, since a closer inspection of Beach shows that Beach discloses the use of a CRC (FCS) for verifying data communication (Col. 12-13, line 54-4).

- In the Remarks on pg. 9 of the Amendment, Applicant contends Beach and Chesson do not disclose a data frame following the beacon in order to reduce an amount of time required by a wireless unit in power-save mode to remain powered-on to receive the data frame. Further, Applicant contends the disclosure of Chesson pertains to unicast transmission and not broadcast.

- The Examiner respectfully disagrees. Firstly, as now shown in the above rejections, Beach discloses support of both continuously awake and power save mode. Beach shows that a mobile in power-save mode will awaken when receiving a beacon indicating the AP has data queued for it and data transmission will commence once the mobile sends a poll responding to the beacon. While Beach does not explicitly disclose the data frame being a first frame after the beacon, combining the disclosure of Chesson, showing a data frame sent immediately following a beacon, with Beach meets the contested claim limitations of reducing the time required for a mobile in power-save mode to remain powered-on for communication with the AP. Further, contrary to Applicant's assertions, Chesson discloses communication of both unicast (overlaid) and broadcast (non-overlaid) beacons and data frames, thereby meeting the contested claim limitations.

- In the Remarks on pg. 10 of the Amendment, Applicant contends that the NAV disclosed by Koutroubinas is not transmitted as part of the beacon but is merely a vector stored by the wireless units to control transmission timing.
- The Examiner respectfully disagrees. While the NAV may be an indicator maintained by each station, its maintenance is predicated on the Beacon Management data sent by the AP, which indicates to the stations how the NAV is to be set. Therefore, the data in the Beacon Management sent by the AP that indicates how the NAV of the stations are to be set meets the claimed "indicator bit".

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregory B. Sefcheck whose telephone number is 571-272-3098. The examiner can normally be reached on Monday-Friday, 8:00am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema Rao can be reached on 571-272-3174. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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GBS
11-30-2006

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